

Flight

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A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

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FRANKFORT FLIGHT EXHIBITION.—The above beautiful conception forms the frontispiece to the official weekly bulletin issued by the Frankfort "Ila." The accompanying quotation from Goethe is:—

*"And a pair of wings themselves unfold.
Thither! I must! I must!
Deny me not flight."*

"EST QUADAM PRODIRE TENUS."

Est quadam prodire tenus, wrote Horace adding, *si non datur ultra*. The observation that all may make some progress though it be not allowed them to go beyond a certain point seems to be at once the lesson and the utility of the great event that is about to take place in the flying world. The long anticipated flying machine race meeting that will commence at Rheims to-morrow will illustrate in the story of many of those who will be competing that all may make some progress, though it may be that not all of those who will take part in the really noble events will live to see flying machines brought to commercial perfection, otherwise that stage when they shall be in general use by the community. The meeting itself, however, will be historic for many reasons. It is the first one of quite a number that have been planned that has materialised. Moreover, the number of competitors that will be represented is extraordinary, for at least two score of machines have been engaged, and there will be nearly as many aviators. This fact alone illustrates incidentally that something uncommonly like an industry in aeroplane manufacturing is established already. What is even more remarkable is that a goodly proportion of the competitors are men of a few weeks' experience only in the management of flying machines. If we look to the immediately preceding movement—the motor car one—we find that by comparison the growth of flying on the Continent has been exceedingly rapid, nor, at the rate things have gone ahead here this summer, is there any reason to suppose that we shall be much behind our rivals abroad, for at Sheppey flying has begun in earnest, and the public will begin to hear of doings there at no distant date.

It must strike the man in the street as being an extraordinary thing that these machines—which he has been told are mere hobbies and which, he understands, can be relied on for service at rare intervals only—should have been collected in large numbers, being expected, as a matter of course, to fly on certain days. Only a little while ago, during practice operations at Rheims, a very severe storm occurred that swept nearly everything that was movable off the ground. Yet scarcely had the tempest subsided than the aviators were taking their machines out of the sheds and putting them to practice flights again.

We regard this meeting as an event of many aspects. Perhaps the chief of them is that of working towards the achievement of more perfect mechanical locomotion through the regions of mid-air that is being undertaken by those pioneers who will figure at Rheims, and by the many who, though they will not be noticed by the public merely because they will not be handling machines themselves, are, nevertheless, the founders of this newest and most wonderful achievement that is giving to man a third region for his activities by adding the realms of air to those of land and water. From the historic point of view the meeting will come to be regarded as epoch-making. Hitherto, it has been sufficiently wonderful that a man here and a man there should be able to fly now or anon according to his will and a variety of circumstances combining. From to-morrow we shall realise what tremendous strides have been made, because we shall find that in place of the performances being isolated they are taking place in company, or, as we may say, in a glorious competition, glorious because it represents a deal more than the prizes that are being raced for or the honour of being first, second, or third. It repre-

sents the achievement of a new and notable phase for the flying machine, that which comes with the production of heavier-than-air craft that can be handled not by one particular man, but by well-nigh any man of ordinary physical standard, and that can be relied on to fly with a very appreciable degree of regularity. This combination of efforts that will go by the name of the Rheims Flying Machine Meeting is something the educational value of which cannot be ignored.

Panem et circenses were described by Juvenal as being the only two objects that really interested the Roman people. It is much the same to this day. The winning of our livelihood and the appeal of sport, especially of the racing sort, constitute the two great objects of life to a mighty portion of the public. It is given to a relatively small class to appreciate developments, as it were, through the intellect. The scientific phases of flight, even as the scientific phases of shipping, railway locomotion, telegraphy, telephoning and photography, do not interest one tithe of those who have occasion to enjoy voyaging on the face of the waters, or to travelling in trains, who have need to send urgent written messages long distances in a minimum of time, who wish to speak their thoughts to people miles beyond the reach of the human voice unaided, or who desire to have a faithful and permanent picture of a scene or face. Of the thousands who are flocking into Rheims now probably not one in a hundred understands how men have learnt to fly. But they are going there because they have read of flights having been made, because they think that sufficiently wonderful, and because they would like to be convinced themselves of the possibility of flight by the process of ocular demonstration. They expect that a goodly proportion of the competitors will fail to be successful in their flights, but they also expect, as we expect, that success will attend the efforts of a sufficient number to prove to them and the world that flying is not a matter of mere chance, but something which it is open to all to achieve who care to provide themselves with machines. They will see that those who succeed in flying are not acrobats, as we are constantly told that flying men must be. To the contrary, as they follow the progress of the competitors through their field glasses they will observe how slight, how slow, and how relatively infrequent are the movements each has to make to direct his machine at will. Doubtless it will come in mind to them as they behold the many and very different types of machines represented, and consider the brief experiences of many of the competitors, that already it is quite an easy thing to learn how to plane, provided a good machine is used, and once accustomed to planing, the system of controlling one machine or another can be picked up quite quickly. For the sake of competitors and visitors alike, it is sincerely to be hoped that the weather conditions at Rheims will be favourable throughout the week, for the value of the meeting is something of far more wide-reaching importance than the furnishing of an occasion to make hotel-keepers busy. If events combine towards success, other meetings in various parts and, let us hope, in Britain, will be promoted within the next twelve months. There is nothing like the healthy stimulus of competition to help forward a new movement. It convinces the public, provides them with material for reflection, wins their sympathies, and, by process of example, results in numbers of newcomers being recruited to supplement the work of the pioneers.

THE CODY FLYER.

At the present moment, when the eyes of the world are directed to the scintillating progress of the aviators on the Continent, S. F. Cody alone shines as a flying star above British soil. His work as a Government servant in the construction and use of what was originally the British Army flyer has been most painstaking, and there is not a man in the country but should feel genuine pleasure at the large measure of success which has now come to reward his labours. What Cody has already done is little compared with what he may reasonably be expected to accomplish now that he is well on the road to victory, and that, again, is a mere nothing compared with what the pilot himself enthusiastically and confidently hopes to achieve.

The flyer, although belonging to the category of tailless biplanes, in reality belongs to a class apart, for it is by far the largest and heaviest machine with which successful flights have yet been accomplished. It embodies much originality in design, and not a little, we believe, of Mr. Cody's own handicraft, for, like the genuine enthusiast that he is, he lives alongside his beloved machine and makes himself personally responsible for its every detail. Many of these latter, too, are the objects of impending patents, and for this reason we are not at liberty to disclose their nature. One of them, for instance, is hidden behind the canvas bag which will be observed immediately below Mr. Cody's feet in the accompanying excellent photograph of the central portion of the machine.

The Chassis.

This view, which really shows the most interesting part of the flyer, illustrates two of the more conspicuously original features in the design, these being the construction of the chassis and the arrangement of the seats. The chassis, according to the photograph, is apparently a three-wheeled affair, but in reality the machine is intended to travel over the ground on the main pair of wheels only, any lack of balance being checked in front by the temporary action of the leading wheel, and behind by a laminated wood skid, which depends like a kangaroo's tail from the rear of the main frame. Further use of the leading wheel is of course to take the shock of striking an obstacle, and it needs no more than a glance at the photograph to realise how very massive and strong is the pyramid-like construction of the outrigger on which it is supported. This same triangular system of construction is in evidence elsewhere also, another notable instance being the principal wood members which slope up to the top deck on either side of the pilot and his passenger. It is to these members that the lower booms of the bamboo outrigger, which carries the elevator and front rudder, are fastened by metal clips. Mr. Cody is one of the few constructors who have placed any faith in bamboo, but inspection of the photograph will reveal the important detail that he takes the precaution of binding the bamboo

between each joint to prevent the splitting to which bamboo is liable. The main struts throughout the machine have a sharp-edged oval section.

The Arched Decks.

The main planes have a span of 52 ft, a chord of 7 ft. 6 ins. and a gap of 9 ft. in the centre, which diminishes to 8 ft. at the extremities. The aspect ratio is nearly 7, which is comparatively high, and should be conducive to considerable lift efficiency. Another most important feature of the flyer is the arching of the span of both main decks, this principle not having been previously adopted, so far as we are aware, in any power-driven flyer, although Wilbur Wright, in his account of his early gliding experiments, states that "We decided to begin alterations at the wing tips, and the next day made the necessary changes in the trussing, thus bringing the wing tips 6 inches lower than the centre." The above mentioned alteration was for the purpose of making the 1902 glider like their previous models in order to eliminate a difference which might possibly have been the cause of a trouble they were then investigating. Glenn H. Curtiss, in the "June Bug," of which an illustration will be found in the Souvenir Supplement of *FLIGHT* of March 20th, arched the upper deck concave



Mrs. Cody in the passenger's seat of her husband's flyer last Saturday, just before the start for one of the splendid flights which Mr. Cody accomplished on that day.

to the earth, but made the lower deck convex, so that the construction as a whole was partially elliptical. In the Cody flyer it must be understood that both decks have their extremities drawn down like a gull's wing, and it is further noticeable that for some few feet from the ends the decks are flattened. Elsewhere there is, of course, considerable camber: the decks are double-surfaced.

Elevator and Rudders.

The arching principle in evidence on the main decks is also applied to the elevator in front. This latter is a divided monoplane of considerable area, and is arranged so that the halves can tilt and dip in unison or in an opposite sense. When working in unison, they perform the function of an elevator. When moving in an opposite sense they act as balancing planes, and are accompanied by a simultaneous movement of the fore and aft rudders. For specially sharp steering, supplementary planes can be attached immediately behind the main decks near the extremities where they are supported by the vertical struts.

Provision is also made for warping the main decks if necessary, and in this connection it is interesting to remark that Mr. Cody has employed the principle of warping for a long time in connection with his man-lifting kites. In these the wing extensions of the main box are warped if it is found that the kite is not riding properly in the wind, but the operation is not, of course, performed while the kite is aloft.

Of the two rudders, the forward member is mounted immediately above the elevator in the centre, while the stern rudder is carried by an independent outrigger at the rear. This latter outrigger is hinged to fold in against the main planes so as to reduce the fore and aft overall dimensions of the machine in its shed.

Control.

The control of the rudders, the elevator and the balancing planes is entirely obtained by manipulation of a universally pivoted lever carrying a steering wheel mounted rigidly upon it. The position which the control occupies in respect to the pilot is well illustrated by the accompanying photograph, which shows Mr. Cody with the steering-wheel pressed against his body. This position is that of normal flight, and the manoeuvres are accompanied by a swaying motion on the part of the pilot, who is in the habit of keeping his position shown in respect to the wheel. The pilot's seat, likewise that used by the passenger, is similar to the seats commonly provided for the drivers of agricultural machines. It is small but comfortable, and gives a sense of security without hampering bodily movement. The seats are fastened to a sloping board, which is hinged to give access to the engine.

The Seats.

There is a two-fold purpose in the tandem arrangement of the seats adopted by Mr. Cody. The first object is that of facilitating the training of pupil pilots, the second object is that of giving the passenger on a military flyer full scope for observation, the working of a gun, or the dropping of bombs as the case may be. In the accompanying illustration the pilot occupies the lower seat, but as instructor, Mr. Cody would take the upper seat as soon as his pupil was sufficiently accustomed to the air to be given momentary control of the machine. From the upper seat it is possible for the instructor to

lean over the pupil and retain control of the machine whenever it may be necessary to do so. In a war flyer, the passenger would also occupy the lower seat, from which point of vantage he would have an absolutely uninterrupted view of everything below him, and by a slight modification of the present controlling mechanism, it would be a simple matter to rig up a gun or other special weapon of offence.

The Engine and Propellers.

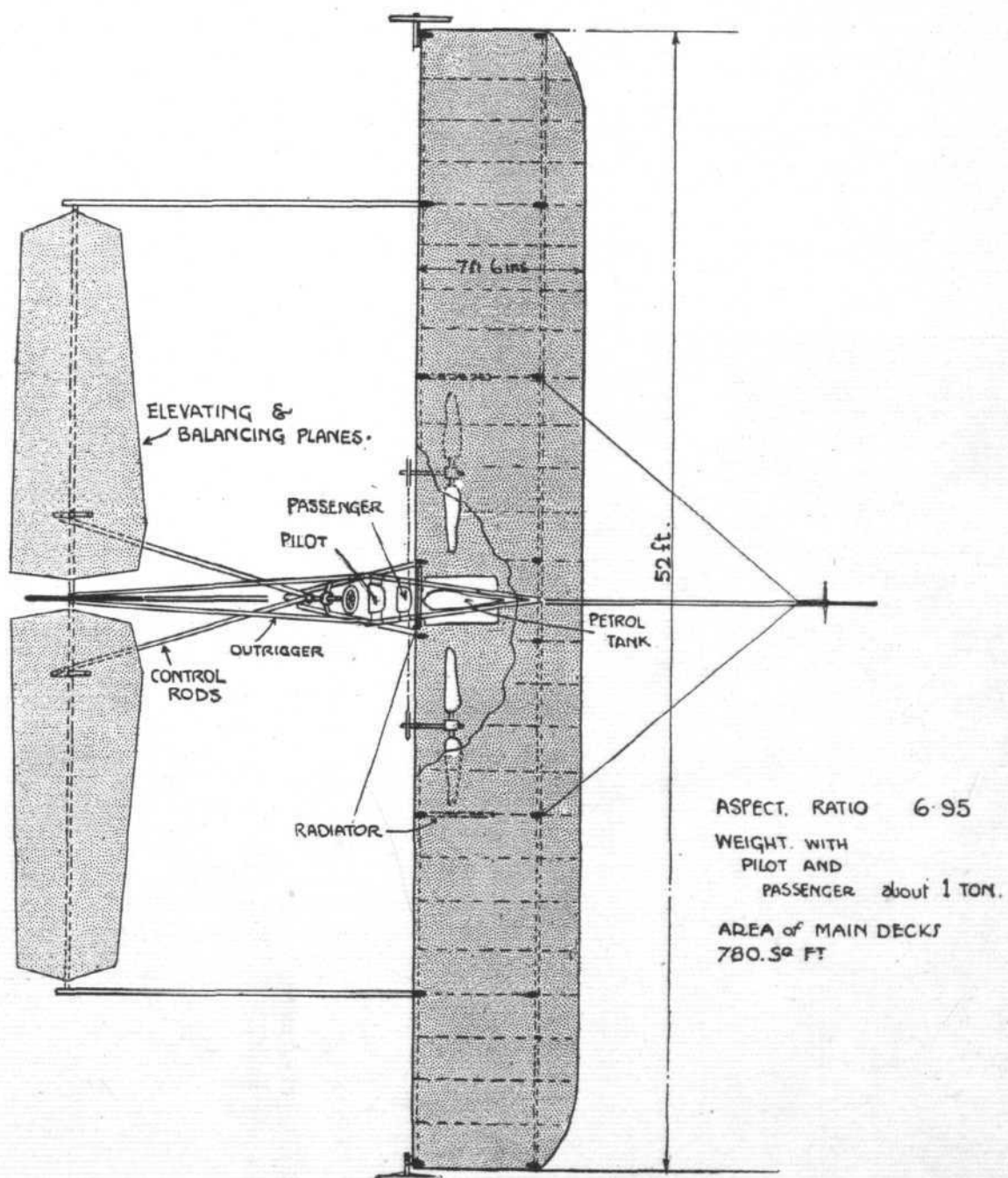
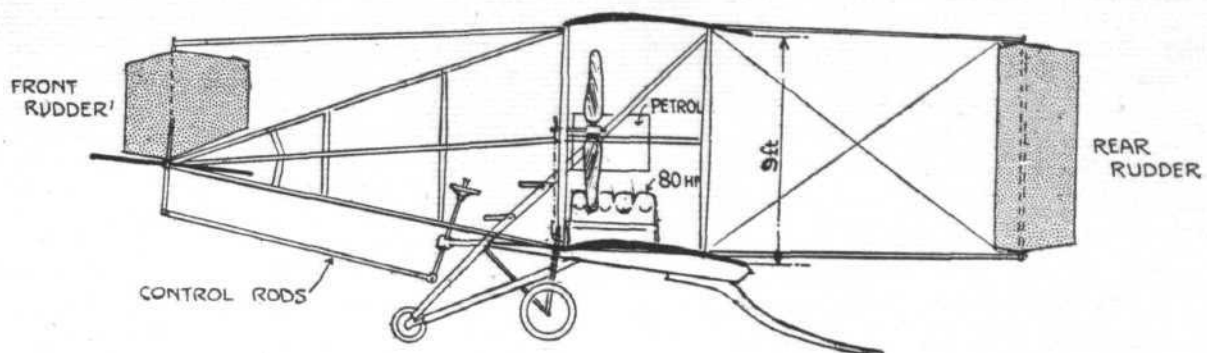
The engine at present used on the Cody flyer is an 8-cylinder E.N.V. developing about 80-h.p. It operates two propellers, revolving in opposite directions, one of them being driven through a crossed chain. The propellers are situated between the main decks, and their short shafts are carried on ball-bearing brackets, braced to the main spars by an extremely interesting construction of tubular steel work and diagonal wire-ties. An entirely unusual feature of the two-bladed propellers on this machine is that they have their arms fastened to the pressure side or face of the blade, instead of, as is usual, on the back of the blade. The arm is enclosed by a false face in order to avoid sharp angles, but there nevertheless exists a high ridge down the face of the blade, and so much is this the case that it seems almost more correct to say that the blade has a special section, presenting a triple curved face. From the cutting edge to the centre the camber increases the pitch, then comes the reversal of the curve where the false face rounds the arm, and finally a renewal of the sharp camber, where the false face runs off into the trailing edge. The blades of the propeller are broader at the base than at the tip, and this, as well as the previously mentioned feature, Mr. Cody considers as advantageous to efficiency. Although not actually fitted to his present machine, Mr. Cody also has a design of bracket for supporting the propellers, which includes a free-wheel hub.

Portability.

Being so large and heavy—in flying order with pilot the weight is in the neighbourhood of 1 ton—the question of portability is all the more important. The main decks, which span 52 ft. in the air, divide into three sections, comprising a central portion of 20 ft. and two end portions of 16 ft. each. The rudder outrigger folds across behind the decks, as already explained, and the elevator outrigger can be dismantled *en bloc*. The chassis can also be taken down without trouble, and thus the whole machine is made ready for easy transport.

Conclusion.

From the foregoing description it will be evident that England possesses one of the most interesting machines which has yet flown, and the fact that it has flown so successfully naturally enhances the importance of every feature in its construction. Incidentally it gives us cause for some gratification that the optimistic view which we took of Mr. Cody's work when last dealing with this machine in *FLIGHT*, February 27th, has been so soon justified. We had occasion then to point out how adverse were the conditions under which experiments were being carried out, how very cheerfully Mr. Cody was risking his neck to win success, and how very early were those days for adverse critics to make disparaging comments. Remember Mr. Cody did not start with a machine which had already flown, and he has, conse-



Mr. S. F. Cody's latest flyer. (This drawing is diagrammatic only.)

quently, had to contend with the hundred and one unknown quantities which collectively or separately may be hindering progress. On the top of all this there used to be the paralysing inconvenience of transporting the flyer from its shed to the flight ground—a proceeding which we had occasion to describe in the aforementioned issue of FLIGHT.

Then, just as things might perhaps have been going well, would come the exasperating delay caused by a burst tyre. Surely it would require the patience

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of Job to win the day under conditions like this. Yet the Government at that time seemed to think it was good enough, and critics seemed to be content to grumble, forsooth, because progress was slow. Mr. Cody is better situated now that he has moved into a shed of his own, and if he has not every convenience that he might like, he is managing to do very well with what he has, and in any case, there still remains the one great fact that he is the only man who is successfully flying in the British Isles to-day.

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RHEIMS AERO MEETING.

It is to be hoped that fine weather will prevail during next week at Rheims, and in view of the storms which broke over the place on Monday and Tuesday nights, it may be anticipated that there is less to come now. Fortunately all the machines were safely under cover, and so no great damage was done, except to the partly-erected shed for the dirigible "Zodiac III," which was blown down. During the last few days the official programme has been slightly re-arranged as follows:—

Sunday, August 22nd.—Elimination contest for the nomination of the French Aero Club's champions in the Gordon-Bennett International Aviation Cup Competition; Prix de la Vitesse, first day; Prix du Tour de Piste, first day; Prix des Aeronauts, first day.

Monday, August 23rd.—Grand Prix de la Champagne et de la Ville de Reims, first day; Prix du Tour de Piste, second day; Prix des Aeronauts, second day.

Tuesday, August 24th.—Prix de la Vitesse, second day; Prix du Tour de Piste, third day; Prix des Aeronauts, third day.

Wednesday, August 25th.—Grand Prix de la Champagne et de la Ville de Reims, second day; Prix du Tour de Piste, fourth day; Prix des Aeronauts, fourth day.

Thursday, August 26th.—Grand Prix de la Champagne et de la Ville de Reims, third day; Prix du Tour de Piste, fifth day; Prix des Aeronauts, fifth day; Landing competition for spherical Balloons.

Friday, August 27th.—Grand Prix de la Champagne et de la Ville de Reims, fourth day; Prix du Tour de Piste, sixth day; Prix des Aeronauts, sixth day.

Saturday, August 28th.—Coupe Internationale d'Aviation Gordon-Bennett; Prix des Passagers, first day; Prix du Tour de Piste, seventh day; Prix des Aeronauts, seventh day.

Sunday, August 29th.—Prix de la Vitesse, third and last day; Prix des Passagers, second and last day; Prix de l'Altitude; Prix du Tour de Piste, eighth and last day; Prix des Aeronauts, eighth and last day.

Most of the competitors have been busily practising during the past few days, some on the Betheny grounds, and others at their old training quarters at Chalons, among the most successful at Betheny being MM. Tissandier and Lefevre on Wright machines, and M. Delagrange on his Bleriot flyer. M. Lefevre has given up the use of the derrick now, and starts by simply running down the rail. Curtiss also made three short flights on Monday, and during a sudden landing slightly damaged his machine, and sprained his right foot rather badly, which may handicap him a little. Mr. Curtiss has now fitted his flyer with a new 8-cyl. V type motor of 35-h.p., in place of the 4-cyl. motor, and he anticipates to get much better results from his machine now.

At Chalons, Latham, having recovered from the accident to his face during his cross-Channel trip, Ruchonnet, Farman, Sommer, and Cockburn have all been doing well, but perhaps the outstanding performance has been that of Henry Fournier, who, on his Itala-engined Voisin machine on Tuesday, on his first attempt at a solo flight, succeeding in circling the parade ground. He then took up M. George Prade, their joint weight being 175 kilogs., and made a fine flight.

The only machines which have been withdrawn are the Santos Dumont flyer, the Austrian representative, one of the Curtiss type, and Esnault-Pelterie's monoplane. This latter has been necessary owing to M. Pelterie being injured while boxing. Besides M. Guffroy, M. Laurens will pilot one of the R.E.P. monoplanes. It is uncertain as to whether Farman will be able to compete. His injuries as the result of the accident, to which we refer elsewhere, are progressing so well that it is hoped he will be able to fly next week, but for other reasons he may decide to abstain from actually taking the air. He is at present trying a very small biplane, with which he will probably compete.

The visit of President Fallières will probably be either on Wednesday or Thursday next.



The Official Advertisement Poster for the Rheims Week.

THE VOISIN BIPLANE, 1908-9 TYPE.

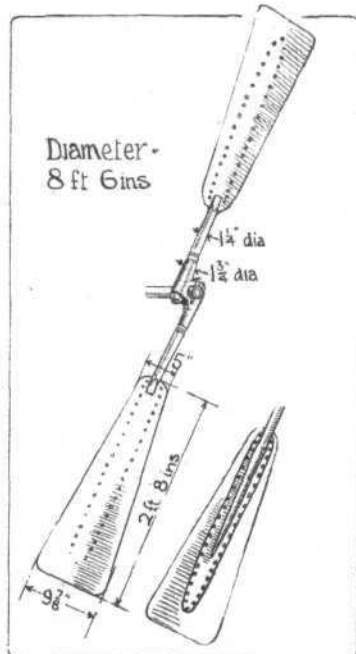
A DETAILED DESCRIPTION OF MR. MOORE-BRABAZON'S "BIRD OF PASSAGE."
(Concluded from page 488.)

Side-Curtains.

ANOTHER feature which characterises the Voisin flyer is the presence of side-curtains between the main decks and also between the decks of the tail, these members being thereby converted into a kind of box-kite construction. Between the main decks there are four side-curtains, one at each end and another between the vertical struts adjacent to those at each end. They consist of sheets of the same surface material as is employed for the decks, and are stiffened by flat ribs enclosed in pockets. To a certain extent they may also receive support from the diagonal wireties which lie adjacent to them.

The real utility of side-curtains has been questioned by some aviators, and M. Delagrange has flown a Voisin machine without them. Leaving aside all considerations affecting those employed between the main decks, it appears to us that the possible influence on the effectiveness of the rudder, of those in the tail, ought certainly to be taken into consideration. We have already pointed out that the rudder is almost entirely enclosed within the tail, and it is difficult to believe that the side curtains do not effect its action.

The part played by the side-curtains between the main decks is not altogether too well defined. They afford a



"Flight" Copyright.
Sketch of the two-bladed propeller on Mr. J. T. C. Moore-Brabazon's "Bird of Passage." The inset drawing shows how the blade is riveted to its arm.

considerable extent of cutwater, which doubtless assists the machine in turning, and it is possible that they also tend to minimise the direct effect of side gusts suddenly striking the machine obliquely.

Engine and Propeller.

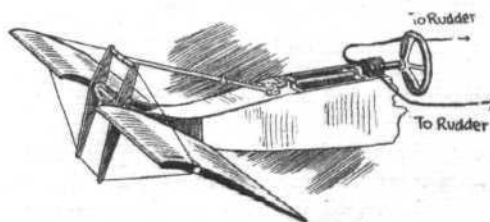
After trying various different engines, Mr. Moore-Brabazon finally selected an E.N.V.* motor of 50-h.p. It is an engine of the 8-cyl. "V" type, and of very substantial construction, although specially designed for flight.

The propeller is mounted direct on an extension of the crank-shaft, and is a two-bladed construction in steel. The blades are riveted to detachable arms, which are bolted to a separate boss in a manner which is clearly illustrated in an accompanying sketch. Some observations on the pitch and efficiency of the Voisin propulsion will be found in FLIGHT, vol. 1, p. 16. In front of the engine, and immediately behind the pilot's seat, is a large honeycomb radiator.

The engine is mounted on a light girder framework of steel, an arrangement which is well illustrated in the accompanying photographs.

Control.

The control of the Voisin flyer is carried out entirely

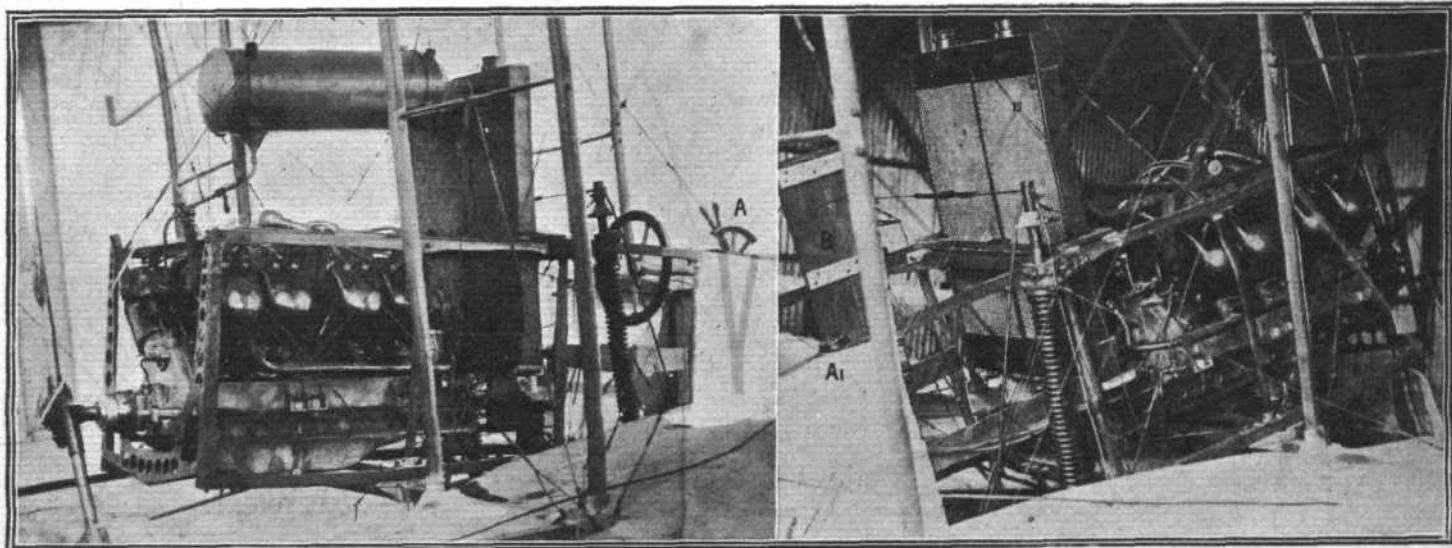


"Flight" Copyright.
Sketch of the steering wheel control on the Voisin biplane, showing the connection between the spindle and the elevator.

by the aid of the elevator and the rudder, the former being operated by pushing and pulling the steering wheel bodily to and fro, and the latter by turning the wheel upon its axis. The steering

follows the same direction as on a motor car; pulling the steering wheel tilts the front edge of

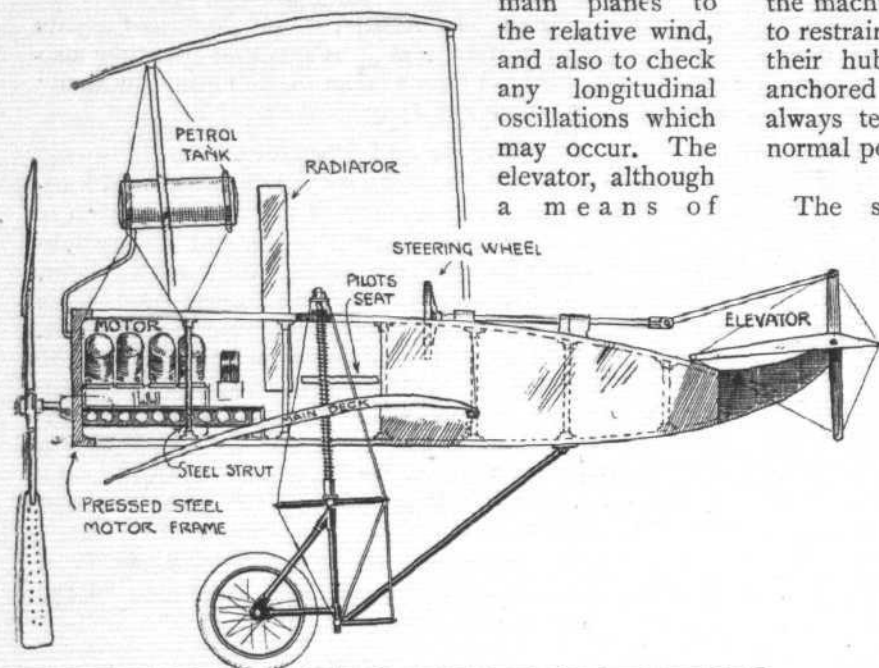
* See FLIGHT, vol. 1, pages 48, 193, 206.



"Flight" Copyright Photo.

Two views of the engine on the Voisin biplane; also showing the pilot's seat and the control. In the right-hand view the seat itself, B, has been turned up into a vertical position. The timing and throttle-levers, A, and also the switch, A¹, are to be seen in the centre of the above illustration.

the elevator for temporary ascents. The purpose of the elevator is to produce temporary ascents or jumps by altering the angle of incidence of the main planes to the relative wind, and also to check any longitudinal oscillations which may occur. The elevator, although a means of



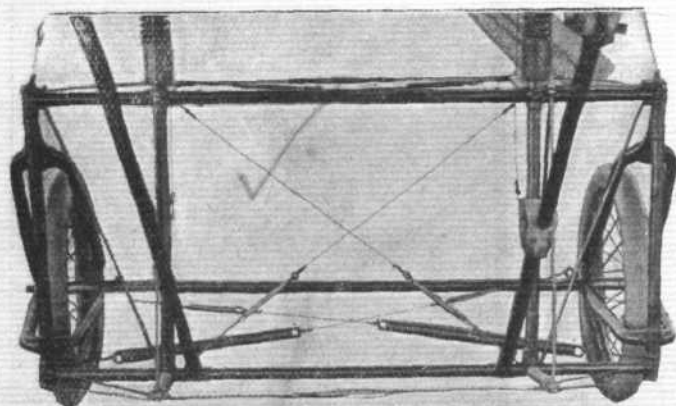
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In the Voisin biplane the engine, the pilot's seat, and the elevator are carried in a girder frame of semi-elliptic form, which is attached direct to a two-wheeled chassis, and forms a unit with the machine. In the above drawing the relative position of the main decks, which are attached to the girder, is also indicated.

beginning an ascent, is not itself endowed with any capacity for causing ascent to be maintained, that alone can result from an increase in the engine power beyond what is necessary to sustain horizontal flight. Lateral stability is maintained by suitably steering the machine, so as to give the depressed wing tip such an increased relative velocity to the air as will cause it to have a greater lift.

The Chassis.

The weight of the machine, with the exception of that part represented by the tail, which is independently supported by a pair of small wheels, rests upon two bicycle wheels shod with 650 by 65 mm. tyres. These wheels are mounted upon a tubular framework, and have a track of 4 ft. 8½ ins. They are so arranged that they



"Flight" Copyright Photo.

Detailed view of the chassis on the Voisin biplane, showing how the wheel axle is anchored to the chassis frame by springs.

can swing, together, to one side or the other of their normal position, like the castors of a chair, a feature which is essential in order to preserve the equilibrium of the machine when it runs along the ground. In order to restrain these movements on the part of the wheels, their hubs, which are joined by a hinged axle, are anchored to the chassis frame by tension springs, which always tend to draw the wheels back again to their normal positions.

Suspension.

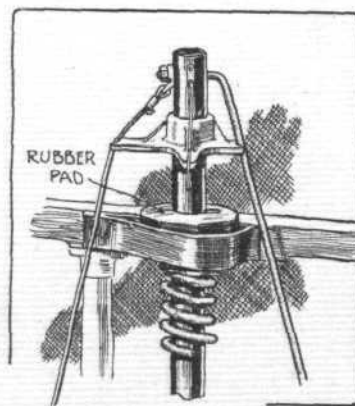
The suspension of the flyer upon the chassis is effected by a pair of long helical springs. Each spring is mounted about a steel column which extends upwards from the chassis and passes through a bracket attached to the girder frame which carries the engine. This bracket serves as an abutment to the upper end of the spring, and it also carries a rubber pad to cushion the effect of the recoil. This point forms one of the attachments of the chassis to the frame, the other attachment being formed by a radius-rod which is hinged directly to the frame at a point further in front. When the springs compress, the effect of these radius-rods is to cant the uprights about which the springs are mounted, a point which should be borne in mind when considering the stresses to which the supporting brackets are liable to be subjected.

Pilot's Seat.

The pilot's seat in the Voisin flyer is situated about a third of the chord behind the leading edge of the main plane, and is contained within the girder frame which carries the engine and the elevator. On Mr. Moore-Brabazon's machine the seat consists of a simple board, hinged so that it can be raised for access to the starting-handle of the engine, which lies almost immediately beneath it. The relative position of the seat to the other principal members is clearly shown by an accompanying sketch.

Girder Work.

From a constructional point of view a flyer presents a series of special problems in girder work, and it is therefore always instructive to consider the design on this basis. The main planes of the Voisin machine constitute together a kind of lattice girder, in which vertical wood struts alternate with diagonal piano-wire ties. Here and there extra struts and tie-wires have been introduced in the manner illustrated by an accompanying diagram which shows the staying of the main spars forming the leading edges of the decks.

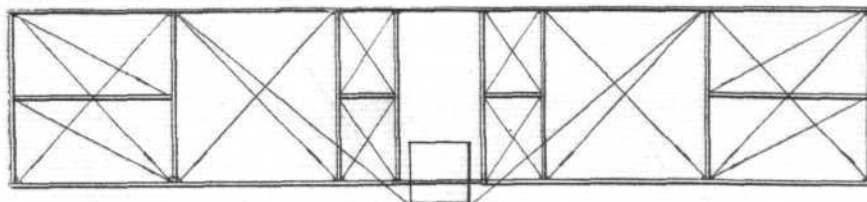


"Flight" Copyright.

The entire weight of the main decks, engine and pilot on the Voisin biplane, carried on a pair of helical springs abutting against manganese steel brackets, arranged as shown in the above sketch.

A point which is always of considerable importance to observe in this connection, is the continuity or otherwise of

of the girder from end to end, and special attention should therefore be paid to the manner in which the lower spars of the main decks are carried across through the supplementary frame used for the engine. In the



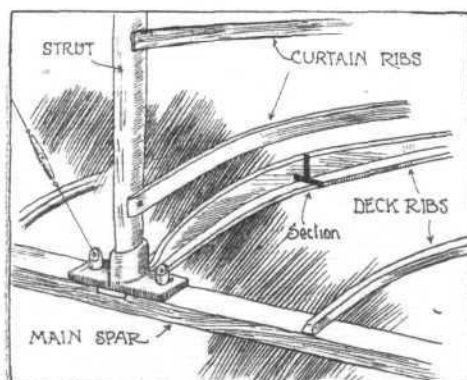
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Diagram of the bracing of the main spars constituting the leading edges of the decks on the Voisin biplane. The square member in the centre is the girder which carries the engine and the pilot's seat.

Voisin construction the front spar is divided at this point and fastened to the engine girder by a bracket, an intermediate member belonging to the girder bridging the gap.

Another example of girder work in the Voisin flyer is the outrigger carrying the tail, but this consists of four rectangular spars attached by brackets to the rear transverse spars of the main decks. Each pair of spars in a vertical plane constitutes a lattice girder, and is braced in a similar manner to the spars in the main decks. There is no bracing, however, between the spars in a horizontal plane, other than that afforded at each end by the tail and the main decks respectively.

The girder, to which the chassis is attached, which carries the engine, the pilot's seat, and the elevator, is a semi-elliptic construction formed by four longitudinal spars braced together by wood struts and diagonal wireties. In the vicinity of the engine tubular steel struts are used instead of ash, and the blank end of the girder is finished off with a pressed steel member, which braces three sides simultaneously.



"Flight" Copyright.

Sketch showing the skeleton framework forming the deck of the Voisin biplane.

already familiar with the aluminium socket-brackets by means of which the struts of the machine are fastened to the spars. This in itself is a feature of the Voisin construction not alone as a detail but also because of the rigid system which it represents. The joints in the Voisin flyer are designed to be quite rigid throughout, and the

tie-wires have tighteners fitted to them, so that they can always be kept taut. On the contrary, the Wright flyer has hook-and-eye joints between the struts and the spars, and the tie-wires are not specially stretched in place; the whole machine is, in fact, built so as to be slack, and therefore able to give when strained.

Materials.

Ash is used throughout in the construction of the machine, with the exception of the steel tube work employed in the chassis. As timber, ash is characterised by its flexibility, and on the Voisin machine it must be confessed that there is not lacking evidence of its capacity in this respect, many of the struts and spars being very much inclined to bend under the load imposed upon them. In flying machine design every effort is, of course, made to keep down the weight, and sections have to be reduced to a minimum in consequence.

For the small fittings such as the socket-brackets for the struts, aluminium is employed, and this metal was also used for the main supporting brackets above the springs, until it gave way during a rough landing. Messrs. Short Brothers then introduced a pair of manganese steel brackets when making the repair, and as these members are in any case not large, the increase in weight is in no way comparable with the value of the additional strength thus obtained for such an important member.

The fabric used for covering the decks is Continental rubber-proofed material.

Dimensions.

Most of the important dimensions likely to be of primary interest to the reader are given on the full-page plan and elevation. There are a few others, however, which it may be of interest to summarise here. The spacing of the ribs in the main decks is approximately 1 ft. 3 ins.; their camber is given by an accompanying diagram. The main transverse spars in the decks are $1\frac{1}{2}$ ins. fore and aft and $\frac{3}{4}$ in. deep, but the section is not symmetrical, being cut away to sharpen the leading edge. The ordinary ribs have a section of about $\frac{5}{16}$ in. by $\frac{3}{4}$ in., while the main ribs of the section are $1\frac{1}{2}$ ins. wide at the base. The struts have a maximum width of $1\frac{1}{2}$ ins. and a maximum depth of 2 ins. They taper slightly towards the extremities, and have a sharp-pointed elliptic section. The longitudinal spars forming the outrigger which carries the tail have a mean section of $1\frac{1}{2} \times 1 \times 1\frac{1}{4}$ ins., while the main spars in the central girder which carries the engine and elevator have a section $1\frac{1}{8}$ ins. square. The ribs in the elevator are spaced 1 ft. $4\frac{1}{2}$ ins. apart.

The smallest wire used has a diameter of about $\frac{1}{16}$ in., but their size varies in different places and is much larger where it is employed for staying the chassis. The tubular steel work of the chassis is mostly $1\frac{1}{4}$ ins. in diameter. The helical springs used in the suspension are 3 ft. long, 2 ins. mean diameter, and of $\frac{3}{4}$ in. circular section.

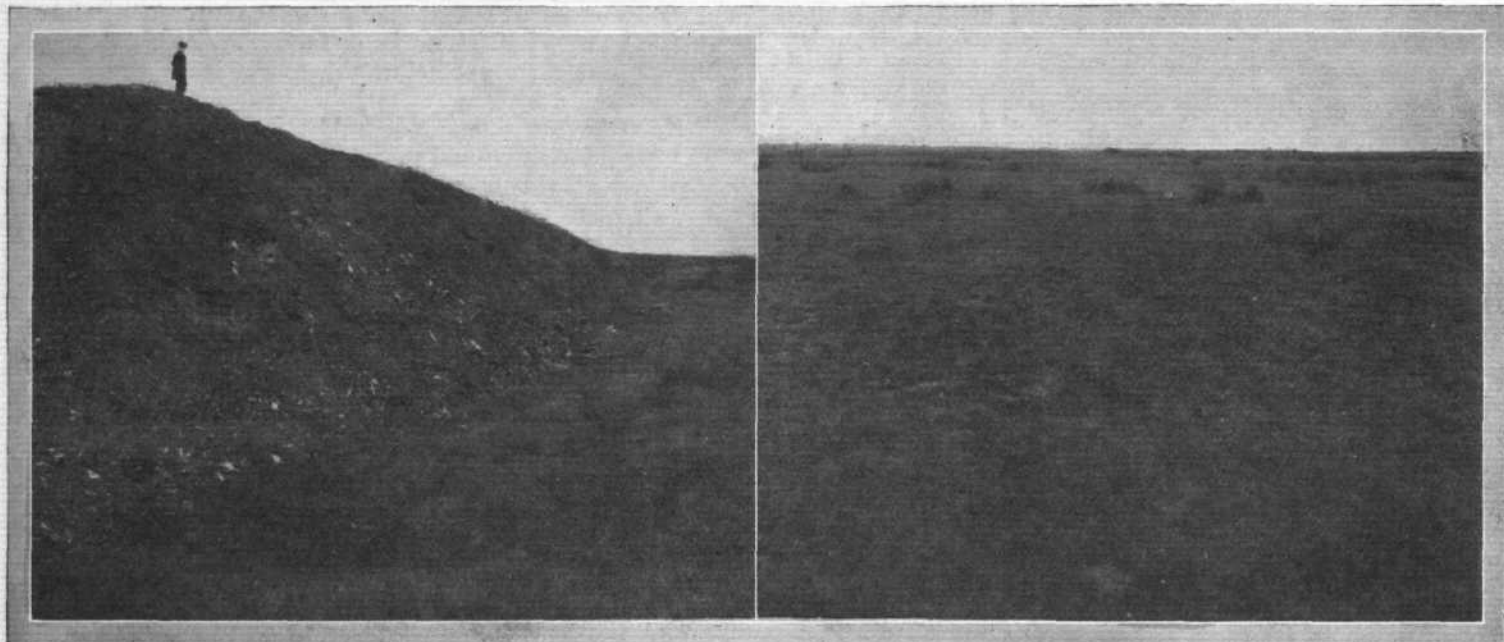
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Blackpool and Fylde District Aero Club.

SUCH is the new title of that very active organisation which was founded some time ago as a model aero club. M. Bleriot has just accepted the first Vice-Presidency of the Club, and, under the guidance of Mr. Jack Kemp,

the energetic Hon. Secretary, a period of activity is promised. Councillor Parkinson has promised to take his Bleriot monoplane to Blackpool, and the Club hopes to have its full-sized glider ready very shortly now.

NEW FLYING GROUND AT BARKING.

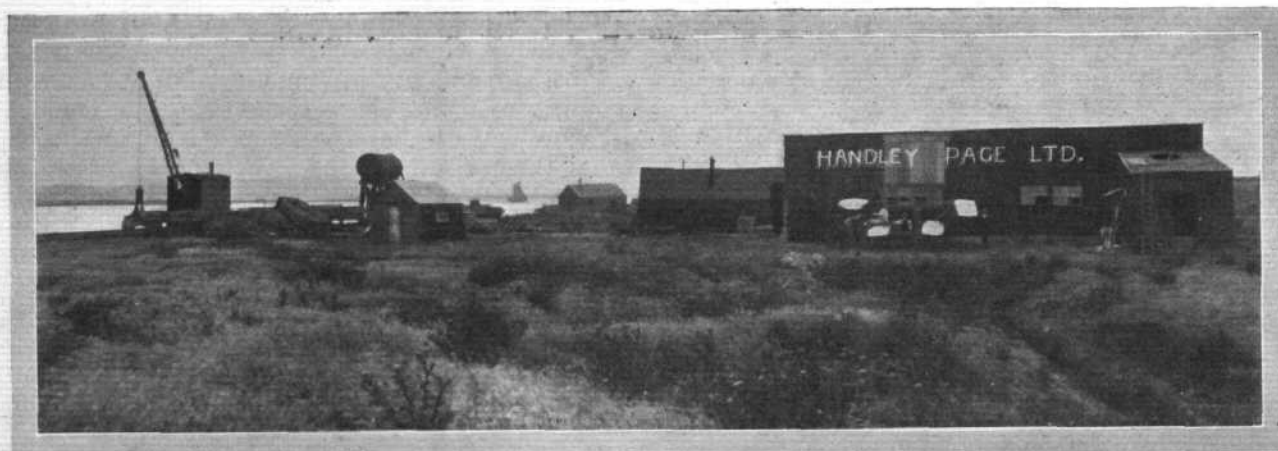


NEW FLYING GROUND.—Two views of the new Handley Page flying ground near Barking. On the left is seen the artificial hill which can be utilised for gliding experiments, while the picture on the right gives an idea of the nature and extent of the flying ground.

ADJOINING the new factory which Messrs. Handley Page, Ltd., now occupy at Creekmouth, Barking, the firm have a very convenient flying ground. It is about $2\frac{1}{2}$ miles long by about a mile wide, and is situated between Barking and Dagenham stations on the L.T. and S. Railway. A flat part of the ground is being levelled for starting purposes, and an artificial hill is available for gliding experiments. These are shown in

our photograph, as is also the workshops where several machines are being built.

These, apart from Mr. Handley Page's own monoplane, include a biplane for Mr. Deverall Saul, another biplane to be fitted with a Green engine, a double biplane, and a direct-lift machine. Trials with some of these machines will shortly be made for the new flying ground.



NEW FLYING GROUND.—View showing the new factory of Messrs. Handley Page, Ltd., on their flying ground at Creekmouth, Barking.

M.P.'s and Aeronautics.

ON the 12th inst. a well attended meeting of Members of Parliament was held at the House of Commons by the invitation of the Parliamentary Aerial Defence Committee. The Chair was taken by Mr. Arthur Lee, and Dr. Glazebrook, Chairman of the Government Advisory Committee on Aeronautics, delivered a lecture on the policy of that Committee and the progress at the National Physical Laboratory at Teddington, from a scientific point of view. In the

course of the discussion afterwards, although satisfaction was expressed with the Advisory Committee's programme, it was apparent, from the official report subsequently issued, that some of the audience thought that actual construction of dirigibles and aeroplanes should be proceeded with simultaneously with the research work undertaken in the laboratory. Adverse criticism was also directed towards the Government scheme of two construction departments, one for the Navy and one for the Army.

AERO CLUB OF THE UNITED KINGDOM.

OFFICIAL NOTICES TO MEMBERS.

Fixtures for 1909.

August 22-29 Rheims Aviation Week.
 August 28 ... Gordon-Bennett Aviation Cup, Rheims.
 October 3 ... Gordon-Bennett Balloon Race, Zurich.

Rheims Aviation Week.

Amended Programme.—The amended official programme will be found on page 504 of this issue.

For the convenience of those members staying in Paris during the aviation week, special trains will leave Paris each morning as follows:—

Paris.	Rheims.	Rheims.	Paris.
8.10 a.m.	Arr. 9.56 a.m.	4.23 p.m.	Arr. 6.22 p.m.
9.4 a.m.	„ 11.3 a.m.	8.15 p.m.	„ 11.18 p.m.
12.16 p.m.	„ 2.40 p.m.	9.21 p.m.	„ 11.35 p.m.

For the return journey:—

Railway Arrangements.—The South-Eastern Railway are issuing First Class Return Tickets to members of the Aero Club at the reduced fare of £2 17s. This only refers to the train leaving Victoria at 11 a.m. on Saturday, August 21st, 1909.

It has not been possible to make any special arrangements as regards hotels, but the following list of apartment houses may be useful to members going over:—

MM. Castella (boarding house), 19, Boulevard de la Paix, Rheims.
 Boissel, 20, rue des Murs, Rheims.
 E. Pierme, 20, rue des Murs, Rheims.
 Léon Brion, 32, rue de l'Ecu, Rheims (house to let at St. Thierry, near Rheims).
 Paul Dely, 23, rue de Bourgogne, Rheims.
 René Humbert, 99, route d'Orléans, Rheims (room to be let, 32, rue Villemot-Huart, à Rheims).
 Villemot-Huart, à Rheims.
 Madame Veuve Chemin, 29, rue des Capucins, Rheims.
 L. Joubert, 47, rue Andrieux, Rheims.
 André Menon, 18, rue de Tillois, Rheims.

J. Ollier, 47, bis rue Châtivesse, Rheims.
 Madame Ludovic Roblot, 155, Gaubourg Cères, Rheims.
 Ribaille-Paquin, Chigny, prèsilly la montagne, Rheims.
 E. Malric, 39, rue de Betheny, Rheims.
 Madame Léon Oge, à Villers-Allerand, par Rilly la Montagne, Marne.
 Jules Bernard, 193, rue des Capucins, Rheims.
 Dettweiler, 29, rue Victor Rogelet, Rheims.

Gordon-Bennett Aviation Cup.

Mr. G. B. Cockburn will be the sole representative of the Aero Club of the United Kingdom in the Gordon-Bennett Aviation Cup, which takes place at Rheims on Saturday, August 28th, 1909.

Norton Griffiths Trophy.

Mr. J. Norton Griffiths has presented a trophy to the Aero Club for flying machines. The Committee are formulating the rules, which will be issued shortly.

Club House at Shellbeach Flying Ground.

The Committee of the Aero Club are proposing to take over Muscle Manor for a Club House on the flying ground. In order that this may be effected, and in view of the very large expenditure which has already been made at Shellbeach, the Committee appeal to the Members for special subscriptions for this purpose. The Golf Course will be taken over for the use of Members, together with the shooting rights extending over 1,000 acres.

The following sums have already been promised:—

Frederic Coleman, £10; Frank McClean, £10;
 H. Massac Buist, £2 2s.

HAROLD E. PERRIN, Secretary.

166, Piccadilly, W.

AVIATION NOTES OF THE WEEK.

Mr. Cody's Splendid Progress: Col. Capper and Mrs. Cody carried as Passengers.

ON Friday and Saturday of last week Mr. S. F. Cody made some notable performances with his aeroplane, which indicate that he is now getting the design right, and is also becoming expert as an aviator. On Friday he covered a distance of about three miles, while in the evening he flew for about four miles, crossing Cove Common and on to Farnborough Common. Turning, he flew back to the Territorial Camp at Jersey Brow and came to rest there. Afterwards he flew back to his shed on Laffan's Plain, thus making a total trip of about six miles.

Next day Mr. Cody was actively at work again, and this time made several flights with a passenger on board. In the first, Col. Capper accompanied Mr. Cody, and was carried along the plain and across to Cove Common, the machine being brought down on Danger Hill, a distance of about a mile and a half. It was then turned, and the return trip made with perfect ease, the aeroplane coming to rest just by the starting point. Mrs. Cody was then prevailed upon to accompany her husband for a trip, thus securing the unique honour of being the first lady to go up in an aeroplane in Great Britain. This time Mr. Cody made several turnings and a figure of eight, all the evolutions being carried out splendidly.

Mr. Cody is so pleased with the behaviour of his machine that he has entered it for the Liverpool to Manchester prize, and proposes taking it to Liverpool under its own power, flying in short stages.

Boulogne-Folkestone Flight.

THE townspeople of Folkestone, having guaranteed to raise their portion (£400) of the prize money for the proposed flight from Boulogne to Folkestone and back, the arrangements are now being rapidly completed. The landing-place is to be within a mile of the centre of Folkestone.

One entry has already been received. M. Paulhan, who has been making such successful flights at Dunkirk, having intimated that he will have a try to win the prize.

Sir Hiram Maxim's Aeroplane.

STEADY progress is being made with the biplane which is being constructed by Sir Hiram Maxim at Erith, and it is hoped that trials will be possible in the course of a few weeks now.

Roe has a Slight Mishap.

DURING the last fortnight Mr. A. V. Roe has been out several times on his little aeroplane, and on Monday and Tuesday last he made one or two short flights. Unfortunately a sudden landing on Tuesday morning threw the aviator through the left-hand main middle plane, which will entail a few days' work before flying will be possible again.

Mr. Cockburn's Progress.

MR. G. B. COCKBURN, Great Britain's representative in the Gordon-Bennett Aviation Cup, has been steadily training under the supervision of Henry Farman at Chalons. On the 13th inst. he went up for several short flights, and on Saturday last made one or two trips of a

quarter of an hour's duration. Two similar flights were also made on Monday.

Henry Farman and a Lady Passenger.

HENRY FARMAN, who was testing the weight-carrying capacity of his machine on the 13th inst., incidentally took up a lady passenger for the first time. During several flights he traversed about 10 kiloms. at a height of 25 metres, and on the occasion when he was accompanied by his passenger he also carried ballast making the extra weight up to 110 kilogs.

Sommer Flies for an Hour.

ON Sunday last M. Sommer at Chalons succeeded in making a flight of 1 hr. 30 secs. He announced just before starting that he intended to fly for one hour, and so came down at the termination of that time, but he could have kept on if he had so wished. In the afternoon he received a new Vivinus motor, which is 20 kilogs. less weight than the old motor, whilst it gives 65-h.p. instead of 50-h.p.

M. Sommer quickly repaired the damage sustained by the fall of his machine on Sunday week. This work was completed on the 13th inst. and the new propeller which had been fitted gave excellent results in the trials then made, and on the following day several flights lasting from twenty to thirty minutes were made.

Farman has an Accident.

LATE on Saturday evening Mr. Henry Farman met with rather a nasty accident while trying the latest aeroplane he has constructed, which is fitted with a 120-h.p. motor. The machine had been driven along the ground for several metres when the radiator burst, and a jet of steam blew on to the left side of Mr. Farman's face. Mr. Cockburn immediately requisitioned the services of a doctor, who dressed the burns so successfully that it is hoped Mr. Farman will be well enough to take part in the Rheims meeting.

Baron de Caters at Frankfort.

PROCEEDINGS at the Frankfort Exhibition have been enlivened during the past week by Baron de Caters, who commenced flying on his Voisin machine at the Exhibition aerodrome on Sunday last. He circled several times round the flying ground, remaining in the air for a space of 5 mins. 17 secs. This quickly drew a large crowd to the ground, and, in consequence, Baron de Caters had some difficulty in landing, but eventually he came down without incident.

On Monday he flew for 8 minutes.



A 5 ft. 6 in. propeller has recently been made by Messrs. Cochrane and Co. for a firm of engineers at Rugby, this propeller being similar in design to the small "Cochrane" fan illustrated by us a few weeks ago. It has its rigid leading edge formed by a steel forging, while the corrugated blades, like the back-plates, are of manganese-steel. The above photograph gives a good idea of the appearance and size of this propeller, which is intended to absorb 22-h.p. at 1,800 r.p.m. and to give a thrust of about 200 lbs.

Bolotoff Triplane at Chalons.

AT last Prince Serge de Bolotoff's triplane, built by Voisin Bros., with which the Channel was to have been crossed, and over which Mr. W. T. Stead let himself loose so immoderately, has arrived at Chalons, having been taken from Billancourt to Chalons by road, extending over six days. The span of the machine is 11 metres, the height 4.15 metres, and the length 12 metres. It is fitted with a 100-h.p. Panhard-Levassor motor weighing 500 kilogs., while the total weight of the machine with pilot and fuel on board is given as 1,200 kilogs.

M. Paulhan at Dunkerque.

ON the 11th inst., M. Paulhan again made a flight from Malo to Bray Dunes and back, covering the 17 kiloms. in 18 mins. 33 secs. He afterwards made a flight lasting twenty minutes, and during the evening went up with the intention of bettering the world's record for duration. Unfortunately, a pin came adrift in the motor after he had been flying for half an hour, and he thereupon had to descend.

New Recruits and Short Flights.

M. RUCHONNET, who is to pilot one of the Antoinette machines at Rheims, was practising at Chalons on Saturday last, and made several flights of 300 metres in length. In landing after the last flight he slightly damaged his machine. He was, however, flying again on Sunday and Monday, and made several runs in a straight line, while on Tuesday he had so far progressed as to make a flight lasting 16 minutes, during which he made five circuits of Chalons Camp. This is marvellous progress for only four days' tuition, and augurs well for his success at Rheims. M. Ruchonnet is a foreman in the Antoinette works, and his mount is a little larger than Mr. Latham's, the lifting surface being 42 sq. metres.

M. Austin made his debut at Juvisy on the same day, flying on his biplane for about 200 metres.

Capt. Ferber (de Rue) also flew for 7 kiloms. at a height of about 15 metres.

On the 13th Mr. Mortimer Singer was experimenting at Chalons with a Voisin machine of the earlier type. He made three circuits over the camp, but slightly damaged the machine in landing.

The new Witzig-Loire-Dutilleul II biplane was tested at Issy on the 13th and also on the following day by M. Busson.

Two aeroplanes are being experimented with in the neighbourhood of Auxerre. At St. Florentin, on the 11th, M. Bouyer succeeded in getting the machine made by himself and MM. Denhaut and Mercier off the ground for 60 metres, and on the 15th, at St. George's, an aeroplane built by four soldiers rose to a height of 1.5 metres, and covered 100 metres, then coming down with a crash owing to a false movement on the part of the pilot.

A trial was given to the Berlioux-Salètes monoplane *Pourquoi Pas?* on the 16th inst. at Fontainebleau, when it flew for 32 seconds. This machine only weighs 61 kilogs., and is of 6.5 metres span and 7 ins. long.

A Triplane at Marseilles.

M. GUERIN has practically completed in his shed on the military ground at Ronet, a triplane which has a lifting surface of 100 square metres. It is to be fitted with an 80-h.p. Rochet-Schneider motor of the Kaiserpreis type, and when complete the machine will weigh somewhere about 1,000 kilogs.

Spanish Flyers at Issy.

ON the 11th inst., at Issy, the Spanish Government biplane was given another trial. Delagrangé, having resigned his position as demonstrator, has been succeeded by M. Wegscheider, who was at the wheel on this occasion. No attempt at flight was made, the machine being simply run along the ground. In turning, however, a gust of wind caught the machine and blew it over, but without doing serious damage.

Two days later the biplane belonging to Senor Fernandez arrived at Issy, and was tested, and, proving satisfactory, was immediately despatched to Rheims.

The Déjardin Prizes.

SOME time ago M. Déjardin offered a prize of 1,000 francs to the Ligue Nationale, who decided that it should be given to the aviator who made the best speed over the circular kilom. up to September 3rd, which, by the way, is the anniversary of the foundation of the League. On Sunday last De Rue (Capt. Ferber) made an attempt for the prize.

M. Déjardin has now offered a second prize to the L.N. This time it is of a value of 5,000 francs, and will be awarded to the aviator who, starting from a point 50 kilometres from the centre of M. Déjardin's property at Parc-aux-Dames, close to Crépy-en-Valois, lands in the park without coming to earth between start and finish. The flight must be made during August, September, or October, either this year or next.

Orville Wright in England.

ON Monday last Orville Wright, accompanied by his sister Miss Katherine Wright, landed at Plymouth from the "Kronprinzessin Cecilie" and proceeded direct to London. He expects to spend at least two months in Europe attending to the various interests of his brother and himself. He stated that he is not contemplating making any flights in England just at present, and has already gone to Germany to carry out the contract made

with the German Wright Company to instruct one or two operators in the art of manipulating the flyers which are being built in Berlin.

Further, Orville Wright stated that he had no intention of flying across the Channel or attempting to fly across the Atlantic. He and his brother were rather striving to improve their aeroplanes, and their latest models could carry petrol to last 25 hours or for 1,000 miles at 40 miles an hour. They could also, if necessary, carry three men, but there was no demand at present for machines which could carry more than two. He pointed out that in the recent U.S. Government tests his speed was 50 miles an hour on the level with a diagonal wind and 42 miles an hour across country, which he believes is a world's record, as the best European speed has not exceeded 38 miles an hour.

Curtiss Pupil Flies Across Country.

ON the 13th inst. Mr. Willard, on the Curtiss biplane, made a splendid performance by flying for about 12 miles across country. Starting from Mineola, he passed over Hempstead and Hicksville, over the latter place he circled several times, and then made for home, but about a couple of miles before his destination was reached the propeller-shaft broke, and the aeroplane glided to earth. The time in the air was 19½ minutes. On the previous day Mr. Willard flew twice, one trip being of about 3 and another a little over 4 miles.

Canadian Aeroplane Trials.

HAVING completed their new flyer, "Baddeck I," Messrs. McCurdy and Baldwin made their first trials with it on Thursday week in the presence of the military officials at Petewawa. A flight, lasting some 50 minutes, was carried out, the altitude during most of the time being about 180 feet.

On the following day, owing to the motor stopping suddenly, the flyer dropped for a distance of about 15 feet, and was slightly damaged.

ANOTHER "DAILY MAIL" PRIZE.

WITH a view to still further encouraging the development of heavier-than-air flying machines, another £1,000 prize has been offered by the proprietors of the *Daily Mail*. This, as will be seen by the following conditions, will be awarded to the aviator who, on August 14th, 1910, shall have covered during the preceding twelve months the longest cumulative distance in officially recorded flights, which may be made either in Great Britain or in France. The following are the conditions, as published by our contemporary:—

"1. The *Daily Mail* offers a prize of £1,000 to the aviator covering in a heavier-than-air machine the greatest total distance

across country, either in England or in France, officially recorded by either the French or English Aero Club, in the twelve months dating from the morning of August 15th, 1909, to the evening of August 14th, 1910.

"2. By 'total distance' is meant not the longest single flight, but the total of all the flights made by the aviator within the twelve months.

"3. By cross-country flight is meant flights other than those performed within the limits of an aerodrome or other enclosed space.

"4. Flights not officially recorded by either of the above-mentioned clubs will not be taken into account in allotting the prize.

"5. The decision as to the winner will rest with a committee composed of the Presidents of the French and English Aero Clubs and the Editor of the *Daily Mail*."

VULCANISED SILK.

A NEW BRITISH-MADE AEROPLANE FABRIC.

UNDER the name of "vulcanised silk," the Scottish Aeroplane Fabric Co. of Ardrossan have introduced a material for the surfacing of flyers and gliders and also for balloon envelopes. It consists of a water-proofed silk, which is both light and strong, and resembles the material which is used in the manufacture of the better quality oil-skins. One strong point in its favour which will appeal to those seeking the all-British flyer, is that it is entirely made and proofed in the Company's Scotch works. The widths, weights and strengths of the fabric are given in the accompanying table, and

Nos. 7½ to 12 therein shown all apply to the class of material which has the oil-skin appearance. No. 1,065 is an altogether coarser fabric somewhat resembling a Shangtung silk.

No. of cloth.	Weight in ozs. per sq. yd.	Width in inches.	Strain per sq. in.	
			Weft. lbs.	Warp. lbs.
7½	2½	36	26	38
8½	2½	36	28	40
10	3½	36	30	44
12	3½	36	34	56
1065	4	36	56	106

AIRSHIP AND BALLOON NEWS.

Zeppelins and the Reichstag.

COUNT ZEPPELIN has now arranged for the visit of the Members of the Reichstag to Friedrichshafen, to take place on September 3rd, and he has invited the Swiss Federal Council to inspect the works on the previous day.

Arrangements have been completed for the trip to Berlin by "Zeppelin III" on August 28th. On arriving at the capital the dirigible will manoeuvre over the Tempelhof parade ground, then circle over Unter den Linden, the Palace, the Rathaus, and each quarter of the city, and finally land on the Tegel shooting range. It is probable that it will remain in the neighbourhood of Berlin for some days so as to allow as many as possible of the inhabitants of the capital to view it.

"Republique" at the Manœuvres.

At the French military manœuvres which are to be carried out at Allier next month, the commander-in-chief will have a new unit at his disposal in the shape of the dirigible "Republique," and it will be interesting to watch the behaviour of the aerial cruiser under service conditions.

"Col. Renard" Launched.

ON Sunday last, the French Army balloon "Col. Renard" left its shed for the first time and made a trial trip lasting about forty minutes. She has been constructed by the Société Astra, and is an improvement on the "Ville de Nancy." She will compete at Rheims for the dirigible prize.

An Accident to "Parseval II."

ON the 12th inst. a disquieting accident happened to the "Parseval II" at Frankfort. An ascent was made with two mechanics and five ladies on board, the balloon slowly crossing the city and gradually coming down very low. It failed to clear the firemen's barracks, with the result that a hole, two metres long, was torn in the envelope. The balloon quickly fell and was deflated, the passengers being rescued safe and sound, although frightened. With the assistance of the firemen and police the remains of the dirigible were packed up and sent back to headquarters on a lorry.

The "Daily Mail" Garage nearing Completion.

ON the last day of the present month the large garage which has been built by the *Daily Mail* for the Clement-Bayard airship will be completed. The building is 365 ft. long, 65 ft. wide, and 98 ft. high, and the sail-cloth curtain, which will act as a door, will weigh more than two tons. At the present time 600 men are at work on the building in three shifts, each working eight hours.

M. Surcouf a Chevalier.

YET another Frenchman, prominent as a constructor of dirigibles, has been honoured, in the person of M. Edouard Surcouf, who has been made a Chevalier of the Legion of Honour. M. Surcouf is the guiding spirit of the Société Astra at Billancourt, and was responsible for the design of the "Ville de Paris," "Clement-Bayard," "Ville de Nancy," and similar dirigibles. He is also secretary of the Commission Sportive of the French Aero Club and of the Commission Aérienne Mixte.

America and the G.B. Balloon Race.

It would appear that America will be represented in the Gordon-Bennett balloon race after all, and, as we provisionally stated a fortnight ago, that Mr. E. W. Mix, who will be pilot for the Stars and Stripes, will use the "America II" which has been lent by its owner, Mr. J. C. McCoy. This balloon took part in last year's race, then being run by its owner, and is of the largest size allowed by the regulations, viz., 2,200 cubic metres capacity. It is splendidly fitted up, and the car is equipped so that should a descent at sea be made the passengers would be in no immediate danger. It is at present being overhauled by the Société Astra at Billancourt before being despatched to Zurich, the starting place of the race.

Over Seven Miles Up in the Air.

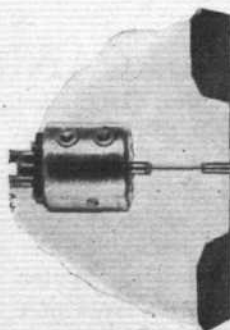
ON the 9th inst. two Italian aeronauts, Lieut. L. Mina and Sig. Mario Piacenza, succeeded in beating the world's record for the highest altitude attained in a balloon. Starting from the Turin Gas Works in the balloon "Albatross," they gradually rose until they reached a height of 11,800 metres, over 7½ miles, at which the temperature was -32°. The balloon descended not far from Albiatgrassio. The previous record was made by the German aeronauts, Berson and Süring, who in the balloon "Preussen" attained a height of 10,500 metres.

Was it the Scareship?

A WONDERFUL story was told in the Manchester Police Court the other day when one coloured gentleman charged another with obtaining money by false pretences. By saying that he had invented an airship for which the British Government was giving him £80,000, the accused induced his acquaintance to advance £5, but it afterwards transpired that the airship was a myth, and the amateur financier became annoyed. According to its "inventor," the airship would carry six guns, and was lying in a Staffordshire brickfield guarded by ten men. A representative of the War Office said that he had an interview with the inventor last June, but nothing was offered by that department for the balloon. The very up-to-date borrower has now two months at His Majesty's expense in which to ponder over his next effort for raising the wind.



MOTORS FOR MODELS.

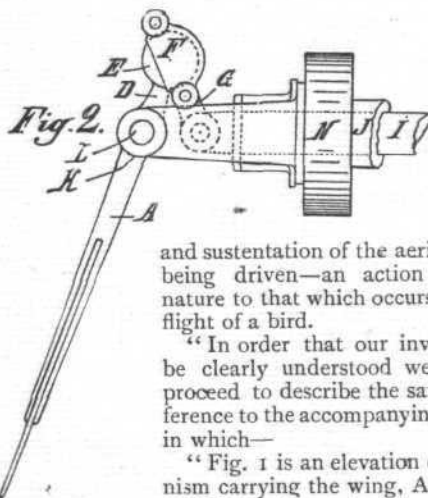
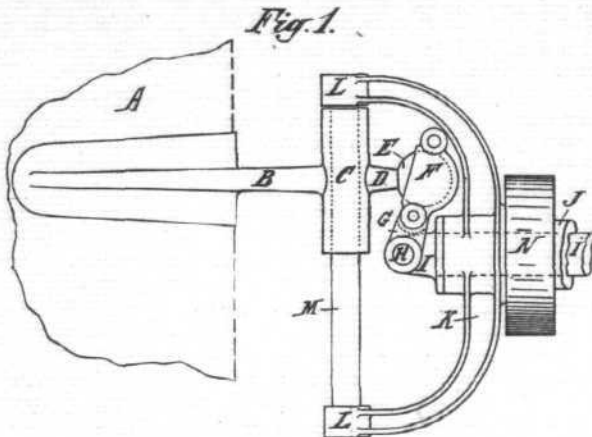


A NEAT little electric motor for use with model aeroplanes is shown in the illustration which we give herewith, this being one of the numerous and most recent designs supplied by the Economic Electric Co., of Twickenham. Complete with its small propeller (4½ ins.), it does not turn the scale at 3 oz., while the actual motor itself is but 1⅜ ins. long by 1¼ ins. in diameter. Its armature is of the 3-pole type running between two field-magnet pole-pieces, and the current consumption is about 2½ amps. on a 4-volt circuit.

INVENTORS' IDEAS.

FLAPPING-WING MECHANISM.

THIS is the patent covering the mechanism used for flapping the wings of the De la Hault orthopter shown by Messrs. Miesse at the Olympia Aero Show. In the words of the patent, "the invention consists of improved means whereby a rotary mechanical movement is transformed into an oval-shaped curve by means of a lever with a universal joint in such a manner that the wing is sometimes vertical and sometimes horizontal so as to ensure both the propulsion



and sustentation of the aerial machine being driven—an action similar in nature to that which occurs during the flight of a bird.

"In order that our invention may be clearly understood we will now proceed to describe the same with reference to the accompanying drawings, in which—

"Fig. 1 is an elevation of a mechanism carrying the wing, A.

"Fig. 2 is an elevation of the said mechanism after the movement has effected a stroke of a quarter of a circle (90°).

"The wing, A, is carried by an arm, B, in one piece with a sleeve, C, from which there projects horizontally an arm, D, ending in a sphere arranged freely in a cup or cavity, F, provided on a small lever, G, pivoting around a fixed stud, H, in one piece with a fixed shaft, I; upon this shaft there is a sleeve, J, movable upon the said shaft and forming the projection of a fork, K, the two extremities, L, L, of which are united by a pivot, M, forming a shaft for the sleeve, C.

"When movement is given to the pulley, N, keyed upon the sleeve, J, the latter drives the fork, K, and this fork rotates the shaft or pivot, M, carrying the sleeve, C. This movement therefore produces the operation of the wing, A. This wing is given a beating or flapping movement produced by the reciprocation of the small lever, G, carrying with it the cavity with a rocking movement in a longitudinal direction.

"During the first quarter of rotation of the fork, K, the wing stem is adapted to move in a curved path from its highest to its lowest position, and in the second quarter the wing moves back to its original position, but with the wing reversed. The wing therefore describes during every half revolution of the fork, K, a closed curve in the form of an oval, which movement is transmitted in such a manner that the plane of the wing is sometimes vertical and sometimes horizontal, thus ensuring both the propulsion and sustentation of the apparatus being driven.

"Having now particularly described and ascertained the nature of our said invention, and in what manner the same is to be performed, we declare that what we claim is:—

"A rotary mechanical movement converted into the profile of an oval-shaped curve by the combination of a rocking ball-joint lever,

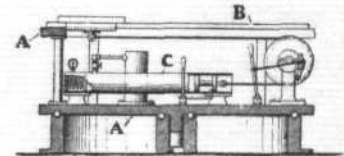
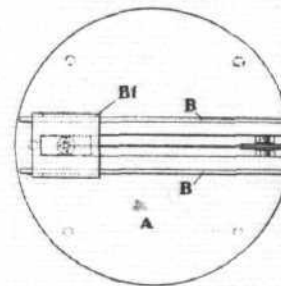
and of a fork transmitting to the wing during every half complete revolution the figure named, in such a manner that the wing is sometimes vertical and sometimes horizontal, thus ensuring both the propulsion and sustentation of the machine being driven substantially as described."—No. 7,524 of 1909. A. de la Hault and J. Miesse.

INSULATED ENVELOPES.

THIS patent describes a method of protecting the contents of an airship envelope or balloon from the risk of explosion by the diffusion of air into the gas-vessel so as to form an explosive mixture. The scheme described is to fit the envelope with an outer covering, between which and the envelope proper is a space that can be filled with an inert gas. Nitrogen is suggested as a suitable medium, or air freed by combustion from oxygen. The exhaust gases from a petrol engine can be employed, but in this case it is preferable to remove the heavier products of combustion by passing the gas through quick-lime. It is also stated in the patent that continual stream of gas may be allowed to pass through the insulating space.—No. 11,934 of 1909. Dr. J. Schilling.

LAUNCHING CATAPULT.

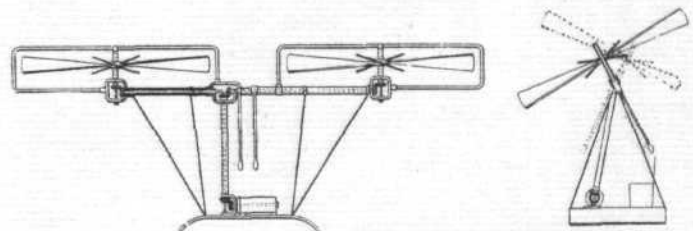
THIS patent describes an invention consisting of a device for launching flying machines. The apparatus consists of a table, A, mounted so that it can revolve into any position in which the launching is desired to take place. On the table are a pair of rails, B, carrying a trolley, B¹, which is



operated by some form of compressed air engine, C. The flyer is mounted on the trolley, and is shot off in the required direction of flight.—No. 9,609 of 1909. J. Means.

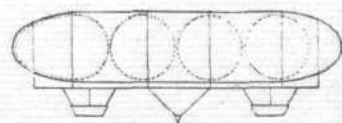
TRANSMISSION FOR HELICOPTERS.

THIS patent describes apparatus relating to the transmission gear of helicopters, and shows a form of construction whereby a pair of



lifting screws can be operated from a vertical shaft and also tilted at an angle in any direction. The claims cover the use of sleeve casings over the driving shafts and a protecting frame over each screw.—No. 205 of 1909. G. A. Metcalf.

TOY AIRSHIPS.



THIS patent describes the construction of toy airships, embodying the use of a composite gas-vessel enclosing small inflated bags.—No. 6,305 of 1909. H. Spranger.



KITE-FLYING COMPETITIONS.

Two competitions are being arranged by the Kite-Flying Association of Great Britain to take place in October. In one competitors will be asked to suggest the best use to which a kite can be put, and to demonstrate their proposals, while the other will be for weight-lifting kites flown by boys. Exact date and place of the competitions will be announced later.

CORRESPONDENCE.

* * The name and address of the writer (not necessarily for publication) MUST in all cases accompany letters intended for insertion, or containing queries.

RE PROPELLER TEST.

To the Editor of FLIGHT.

SIR,—I read with some interest your report in FLIGHT of the trial of Mr. Cochrane's propeller against the Beedle propeller. The conclusion that one might arrive at in reading this report must to a great extent be unsatisfactory. It will be observed that per electrical h.p., our propeller was far and away the better of the two, although the weight of the propeller was greater, but surely a few ounces, or lbs., that one propeller may weigh more than another is quite insignificant in comparison with the h.p. required to drive it, and therefore the weight of the motor.

I am glad to say that we have received instructions from M. Bleriot to make a propeller for the aeroplane that he is now constructing, and we think that it will be far better to have a demonstration of a larger diameter propeller, a propeller, in fact, that would be of some use in aviation, rather than to test a series of toys.

Yours faithfully,
HENRY J. ROGERS,
WATFORD ENGINEERING WORKS.

ANOTHER PROPELLER CHALLENGE.

To the Editor of FLIGHT.

SIR,—Referring to my recent letters conveying the above, although I singled out Mr. Handley Page (the favour of whose further reply I await), I now desire to extend my challenge to all comers with large propellers.

In continuation of my letter of last week, I would say to Mr. H. Page, that if the carrying capacity of the aeroplane selected admits of it, I will accompany the pilot on the trial flights.

Yours faithfully,
SIDNEY H. HOLLANDS.

To the Editor of FLIGHT.

SIR,—We note that Mr. Sidney Hollands does not wish to enter twin propellers, and therefore the machines upon which we gave him the option of fitting two of his propellers will be of no use to him.

We have much pleasure in saying that we shall be able to have the competitive trial with a tractor screw upon a monoplane, but we are afraid that it will be another three or four weeks before the first of our monoplanes will be ready for its trials.

Yours faithfully,
HANDLEY PAGE, LTD.,
HANDLEY PAGE, Managing Director.

To the Editor of FLIGHT.

SIR,—If Mr. Cochrane's challenge *re* model propellers still holds good, I should like to arrange to test my propeller against his at the earliest convenience.

Yours faithfully,
Shepherd's Bush.
L. TURNER.

STILL WANTED: A CLOCK-WORK MOTOR.

To the Editor of FLIGHT.

SIR,—Many thanks for sketch and reply to my letter recently published in FLIGHT, the points I raised are now quite clear to me.

What a blessing it would be to amateur models makers if some enterprising firm could bring out a light clockwork motor at a reasonable price. I am now on the look-out for something of this sort to drive my models, but have heard nothing up to the present.

Should you know of one I should be extremely obliged if you will give me the name and address of the makers.

Thanking you in anticipation,
Huddersfield.
Yours faithfully,
VIVIAN B. LEAROYD.

THE CENTRE OF GRAVITY.

To the Editor of FLIGHT.

SIR,—In your issue of August 7th you mention the fact of the centre of gravity of the Plazzeriaud triplane being place very low, and as to opinions differing on the advantage of this principle. Perhaps a few remarks as to my experience in this direction may do no harm. In the machines I refer to, the centre of gravity was kept very much lower than is the case with any present successful aeroplane, the surfaces being superposed, and it was thought this would be an advantage, but it was proved conclusively that the fact of

placing the centre of gravity low was not of itself sufficient to ensure lateral stability, except in a calm or when the machine was dead head to wind.

The cause of the trouble was this, that in flying across the wind as each gust struck the machine the lower heavier part was less easily deflected from its course than was the upper lighter part, consequently the machine heeled over to leeward. In addition to this, the end of the sustainness to windward being momentarily more affective as regards lift, the machine was practically blown over before you knew where you were and before the centre of gravity had had time to assert itself.

It was the same in turning; if too short a radius was attempted the lower part would swing out, and allow the inner end of the surface to come in contact with the ground, the flights being carried out low down. I should mention that no means of warping the surfaces were provided.

The remedy would appear to consist in arranging a sufficient area of fore-and-aft surface below the centre of gravity, making a keel, as it were; the effect of this would be that the whole machine would be blown to leeward on an even keel, and if the centre of pressure of this surface or surfaces was arranged to come behind the centre of gravity, it would have the effect of tending to bring the machine head to wind, therefore, keeping it up to its course. Of course, a vertical rudder placed aft tends to do the same things. I certainly do not believe in fitting a vertical rudder in front. I should anticipate no practical difficulties as regards control with a machine such as I have endeavoured to describe. All the trouble that I have seen in this direction has been caused through the machine having lateral motion in regard to the air it was passing through, whether caused by the rudder or the varying speed of the atmosphere. Therefore the solution of the problem, if such it is, of obtaining automatic lateral stability appears to consist in providing such an area of vertical surface as to practically make the machine incapable of any lateral motion as regards the air it is passing through, such surfaces correctly distributed in conjunction with a low centre of gravity should go far in keeping the machine on its feet, as it were.

Yours truly,
Shepherd's Bush.
F. H. PHILLIPS.

[Correspondence and other matters have again to be held over.—ED.]



NEW COMPANIES REGISTERED.

C. W. Agency, Ltd.—Capital £500, in £1 shares. Dealers in motors of all kinds, cycles, boats, flying machines, &c.

Planes, Ltd.—Capital £10,000, in £1 shares. Aeroplane, balloon, kite, parachute, flying machine, and aquaplane boat and ship builders, &c.



Aeronautical Patents Published.

Applied for in 1908.
Published August 19th, 1909.
15,924. T. G. K. CLARKE. Aeronautical machines.
16,153. F. WOOD. Aerial machines.

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THE publishers have pleasure in announcing that they have secured a few of the back issues of FLIGHT, and any of our new readers who may wish to complete their sets may obtain the first thirty-three numbers for 5s. od. (abroad 7s. 9d.) post free, from the Publishers, 44, St. Martin's Lane, W.C.

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